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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,146	08/31/2005	Konrad Wissenbach	31583-212399 RK	1368
26694	7590	12/16/2008		
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EXAMINER				
HEINRICH, SAMUEL M				
ART UNIT		PAPER NUMBER		
3742				
MAIL DATE		DELIVERY MODE		
12/16/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/519,146

**Applicant(s)**

WISSENBACH ET AL.

**Examiner**

Samuel M. Heinrich

**Art Unit**

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 5, and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN 4,229,232 to Kirkpatrick.

Banas describes well known melting of a thin surface layer by a concentrated energy source. Banas describes pulsed or continuous laser. Banas provides examples of melt depth of 0.01 mil and 0.1 mil (equivalent to 0.254 micron and 2.54 micron). Volkmann et al describe (Abstract) use of a laser beam for melting and resolidifying a

surface with projections less than 20 micrometers. Volkmann et al describe use of selected gas.

Kirkpatrick describe (column 3, lines 21-45) variable parameters in laser processing including duration of pulses.

The use of the instant claimed pulse duration times and remelting depths would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because particular materials require different particular process parameters and because developments in the laser art has provided a greater range of parameters useful for surface treatments.

Decreasing remelting depth toward an edge would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because the workpiece thickness reduces at an edge and thereby changes heat transfer in the workpiece.

Changing the path angle in subsequent remelt steps would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides more uniform energy input during the beam travel.

Line and rectangle beam cross sections are well known and substitution thereof for the spot beams would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because they provide a uniform energy spot profile.

Claims 2, 4, 6, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann

et al in view of USPN 4,229,232 to Kirkpatrick as applied to claim 1 above, and further in view of USPN 5,232,674 to Mukai et al.

Mukai et al describe (Abstract) a first irradiation step and describe a second irradiation step "after the first step with an energy density such that only a surface portion of the conductor layer melts".

The use of plural smoothing and polishing steps with treatment parameters resulting in increasingly reduced remelting depths would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because the plural steps provide improved planarization.

Decreasing remelting depth toward an edge would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because the workpiece thickness reduces at an edge and thereby changes heat transfer in the workpiece.

Changing the path angle in subsequent remelt steps would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides more uniform energy input during the beam travel.

Banas describes use of a flowing inert gas.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN 4,229,232 to Kirkpatrick as applied to claim 1 above, and further in view of USPN 6,552,302 to Matsushita.

Matsushita describes (column 5, line 66 through column 6) melting and resolidifying a plurality of times to correct a surface and the use thereof would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides greater control of the degree of processing.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN 4,229,232 to Kirkpatrick as applied to claim 1 above, and further in view of USPN 6,670,575 to Wrba et al.

Wrba et al describe (column 1, lines 17-32) well known path meandering and the use thereof in remelting would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides user's a choice on heat input into a workpiece depending on workpiece shape or material properties.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN 4,229,232 to Kirkpatrick as applied to claim 1 and further in view of USPN 4,401,726 to Gnanamuthu.

Gnanamuthu describe surface modification using rectangular beam shapes and the use thereof would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides uniform energy to the work.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN

4,229,232 to Kirkpatrick as applied to claim 1 and further in view of USPN 4,451,299 to Smeggil et al.

Smeggil et al describe preheat and the use thereof would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides repeatable work processing.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,122,240 to Banas in view of USPN 4,968,383 to Volkmann et al in view of USPN 4,229,232 to Kirkpatrick as applied to claim 1 and further in view of USPN 5,997,377 to Sagara et al.

Sagara et al describe (Summary) that it is known in the prior art to selectively melt by laser to retain some portions and the retaining of selected structure would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art because it provides method application to preprocessed workpieces.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel M. Heinrich whose telephone number is 571-272-1175. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Samuel M Heinrich/  
Primary Examiner, Art Unit 3742